Appendix B

GLOSSARY OF TERMS

acclimatization
physiological adaptation to climatic variations

active layer
the top layer of soil in permafrost that is subjected to seasonal freezing and thawing

adaptability
the degree to which adjustments are possible in practices, processes, or structures of systems to projected or actual changes of climate; adaptation can be spontaneous or planned, and can be carried out in response to or in anticipation of changes in conditions

afforestation
forest stands established artificially on lands that previously have not supported forests for more than 50 years

agroclimatic
climatic conditions as they relate to agricultural production; discrete set of zones each of which identifies areas capable of like types and levels of agricultural production

airshed
the mass of air associated with a usually enclosed or otherwise bounded area, like a cove or valley

albedo
the surface reflectivity of the globe

algal blooms
a reproductive explosion of algae in a lake, river, or ocean

alpine
the biogeographic zone made up of slopes above timberline and characterized by the presence of rosette-forming herbaceous plants and low shrubby slow-growing woody plants

anaerobic
living, active, or occurring in the absence of free oxygen

anaerobic digestion
fermentation processes conducted in the absence of oxygen

anthropogenic
caused or produced by humans

anticyclone system
a system of winds that rotates about a center of high atmospheric pressure (clockwise in the Northern Hemisphere and counterclockwise in the Southern Hemisphere)

aquifer
a stratum of permeable rock that bears water

arbovirus
any of various viruses transmitted by arthropods and including the causative agents of dengue fever, yellow fever, and some encephalitis

arid lands
ecosystems with <250 mm precipitation per year

autonomous adaptation
adaptation that occurs without specific human intervention

bagasse
the dry, fibrous residue remaining after the extraction of juice from the crushed stalks of sugar cane; used as a source of cellulose for some paper products and as a source of energy

ballast
a device that takes electricity from the line and transforms that electricity to the proper current and voltage for starting and operating a fluorescent lamp

baseline scenario
the set of predicted levels of economic growth, energy production and consumption, and greenhouse gas emissions assumed as the starting point for an analysis of mitigation options

baseload
that part of total energy demand that does not vary over a given period

biodiversity
the number of different species or functional groups of flora and fauna found in an area or ecosystem

biofuels
fuels obtained as a product of biomass conversion (e.g., alcohol or gasohol)

biogas
a gas composed principally of a mixture of methane and carbon dioxide produced by anaerobic digestion of biomass

biogeography
the study of the geographical distribution of living organisms

biomass
the total quantity of living matter in a particular habitat; plant and organic waste materials used as fuel and feedstock in place of fossil fuels

biome
a grouping of similar plant and animal communities into broad landscape units that occur under similar environmental conditions

bottom-up modeling
a modeling approach that arrives at economic conclusions from an analysis of the effect of changes in specific parameters on narrow parts of the total system

breeder reactor
a reactor that produces from a non-fissile material a fissile material (e.g., plutonium) identical to the one it consumes and in greater quantity (i.e., the ratio of fissile material by material consumed is greater than unity)

building stock
the residential and/or commercial structures extant in a society or a geographic area

busbar
conductor for collecting and distributing electric current; frequently used to denote electricity generation output, capacity, or generating costs of power plants at output or capacity rates of electricity delivered to the busbar

C_3 plants
plants that produce a three-carbon compound during photosynthesis, including most trees and agricultural crops such as rice, wheat, soybeans, potatoes, and vegetables

C_4 plants
plants that produce a four-carbon compound during photosynthesis; mainly of tropical origin, including grasses and the agriculturally important crops maize, sugar cane, millet, and sorghum

calcining
the heating of calcium carbonate to high temperatures to thermally decompose it into carbon dioxide and calcium oxide

calving
the breaking away of a mass of ice from a floating glacier, ice front, or iceberg

CAM
variant of the C_4 photosynthetic pathway in which most gas exchange occurs at night; occurs primarily in succulents (e.g., cacti)

carbon intensity
CO_2 emissions per unit of energy or economic output

carbon sequestration
the biochemical process through which carbon in the atmosphere is absorbed by biomass such as trees, soils, and crops

carbon sinks
chemical processes that absorb carbon dioxide

carbon stocks
the amount of carbon that is stored in carbon sinks

carbon tax
a levy exacted by a government on the use of carbon-containing fuels for the purpose of influencing human behavior (specifically economic behavior) to use less fossil fuels

carrying capacity
the number of individuals in a population that the resources of a habitat can support

catchment
area having a common outlet for its surface runoff

catotelm
the layers of peat generally not subjected to oxic conditions; also called peat proper

Chagas' disease
a parasitic disease caused by the *Trypanosoma cruzi* and transmitted by triatomine bugs in the Americas, with two clinical periods: Acute (fever, swelling of the spleen, edemas) and chronic (heart disorder that may produce high fatality, or digestive syndrome)

CO_2 fertilization
the enhancement of plant growth as a result of elevated atmospheric CO_2 concentration

coefficient of performance
the ratio of useful thermal energy output per unit of energy input; a measure of the thermal efficiency of an energy-conversion device

cogeneration
production of electricity and heat, both as main output, by a combined process (combined heat and power) from energy sources (e.g., from coal, oil, gas, or nuclear power) in an installation such as a thermal plant or block heating station

combined cycle
electricity generation using one or more gas-turbine generator units whose exhaust gases are fed to a waste-heat boiler, which may or may not have a supplementary burner; the steam raised by the boiler is used to drive one or more steam-turbine generator units

communicable disease
infectious disease caused by transmission of an infective biological agent (virus, bacterium, protozoan, or multicellular macroparasite)

consumer surplus
a measure of the value of consumption beyond the price paid for the goods

converter reactor
a device in which a self-sustaining nuclear fission chain reaction can be maintained and controlled (fission reactor)

cryosphere
all global snow, ice, and permafrost

decarbonization
reduction of carbon intensity of an energy process or a system

demand-side management
any activity designed to alter the customer's timing or use of electricity, natural gas, or other energy form; such actions are designed to control the demand upon that utility by manipulating the consumers' use of electricity to limit electricity usage during peak periods, shift usage from demand peaks to demand valleys, build load, conserve overall energy usage, and/or otherwise change the demand placed upon the utility

dematerialization
decreasing the amount of a material employed in a product by employing a design that exercises economy in material usage or by substituting a lighter material for the original

Dengue fever
an infectious viral disease spread by mosquitoes, the first infection of which is often called breakbone fever and is characterized by severe pain in joints and back, fever, and rash; a subsequent infection is usually characterized by fever, bleeding from bodily orifices, and sometimes death

desert
an ecosystem with <100 mm precipitation per year

diapause
period of suspended growth or development and reduced metabolism in the life cycle of many insects, when organism is more resistant to unfavorable environmental conditions than in other periods

digestor
a tank designed for the anaerobic fermentation of biomass; a vessel in which substances are softened or decomposed, usually for further processing

disposable income
the amount of income available for consumers to spend on discretionary items

dissolved load
the amount of particles in a stream or other water source that arises as a result of erosion

district heat
thermal energy transmitted through pipelines in the form of heated water or steam to point of consumption

diurnal climate
a climate with uniform amplitudes of temperature throughout the year

econometric
an approach to studying a problem through use of mathematical and statistical methods in the field of economics to develop and verify theories

economies in transition
national economies that are moving from a period of heavy government control toward lessened intervention, increased privatization, and greater use of competition

ecotax
a levy exacted by a government for the purpose of influencing human behavior (specifically economic behavior) to follow an ecologically benign path

ecotone
transition area between adjacent ecological communities (e.g., between forests and grasslands), usually involving competition between organisms common to both

ecotopic
tendency or involving adjustment to specific habitat conditions

edaphic
of or relating to the soil; factors inherent in the soil

El Niño
an irregular variation of ocean current that, from January to February, flows off the west coast of South America, carrying warm, low-salinity, nutrient-poor water to the south; does not usually extend farther than a few degrees south of the Equator, but occasionally it does penetrate beyond 12°S, displacing the relatively cold Peruvian current; usually short-lived effects, but sometimes last more than a year, raising sea-surface temperatures along the coast of Peru and in the equatorial eastern Pacific Ocean, having disastrous effects on marine life and fishing

embodied energy
the energy (natural gas, oil, coal, etc.) that is required to produce a manufactured good and that is thereby included in the finished product or service

emission factor
a coefficient that relates actual emissions to activity data as a standard rate of emission per unit of activity

endemic infection
a sustained, relatively stable, pattern of infection within a specified population

energy conversion
energy transformation with a change in the form of energy

energy efficiency
ratio of energy output of a conversion process or of a system to its energy input; also known as first-law efficiency

energy intensity
ratio between the consumption of energy to a given quantity; usually refers to the amount of primary or final energy consumed per unit of gross domestic or national product

energy service
the application of useful energy to tasks desired by the consumer such as transportation, a warm room, or light

energy transformation
production of energy involving no change in the physical state of the form of energy

engineering cost
the direct materials and labor costs associated with projects; these estimates are used in assessments of the economic feasibility of mitigation projects

enhanced oil recovery
advanced methods for recovering oil from reservoirs in addition to that recoverable by conventional primary and secondary recovery methods; enables larger proportion of oil *in situ* to be exploited from a reservoir

enthalpy
energy content per unit mass

epidemic
appearance of an abnormally high number of cases of infection in a given population; can also refer to noninfectious diseases (e.g., heart disease) or to acute events such as chemical toxicity

eutrophication
the process by which a body of water (often shallow) becomes (either naturally or by pollution) rich in dissolved nutrients with a seasonal deficiency in dissolved oxygen

evapotranspiration
loss of water from the soil both by evaporation from the surface and transpiration from the plants growing thereon

exergy
the maximum amount of energy that under given (ambient) thermodynamic conditions can be converted into any other form or energy; also known as availability or work potential

exergy efficiency
the ratio of (theoretical) minimum exergy input to actual input of a process or a system; also known as second-law efficiency

fallow
land left unseeded after plowing; uncultivated

fast ice
sea or lake ice that remains tied to the coast (usually less than 2 m above sea level)

feedback
when one variable in a system triggers changes in a second variable that in turn ultimately affects the original; a positive feedback intensifies the effect, and a negative reduces the effect

feedstock
raw material (e.g., oil products or natural gas) used as input into industrial processes for manufacturing of materials or consumer goods (e.g., plastics, fertilizer, etc.); energy feedstocks are often included in total energy consumption even though they represent so-called non-energy consumption

final energy
the energy supplied to the consumer to be converted to useful energy (e.g., electricity at the socket, gasoline at the service station, or fuelwood in the barn); sometimes also called available energy, but the term should be avoided due to possible confusion with availability or exergy

first-law efficiency
see energy efficiency

fluidized bed
a bed of fuel and non-combustible particles set in vigorous, turbulent motion by the combustion air blowing upward throughout the bed; the non-combustible particles are generally coal ash or a sulfur-absorbent (acceptor) such as limestone

fluidized bed combustion
a method of burning a fuel with non-combustible particles in a state of suspension by the upward flow of the combustion air through the fluidized bed

fly-ash
the mineral content of coal released as particulate matter upon its combustion

food calorie
1000 (technical) calories

forest
an ecosystem in which the dominant plants are trees; woodlands are distinguished from forests by their lower density of trees

forestation
generic term for establishing forest stands by reforestation and afforestation

forest decline
premature, progressive loss of tree and stand vigor and health

frazil ice
fine spicules or plates of ice in suspension in water

fuel cells
devices for the conversion of chemical energy to electrical energy

general equilibrium analysis
an approach that considers simultaneously all the markets in an economy, allowing for feedback effects between individual markets

geomorphic
of or related to the form of the Earth or its surfaces

germ plasm
the reproductive cells of an organism, in particular the portion of the cells involved in heredity

greenhouse gas
any gas that absorbs infrared radiation in the atmosphere

gross primary production
the amount of carbon fixed in photosynthesis by plants

ground ice
ice present within rock, sediments, or soil

groundwater recharge
process by which external water is added to the zone of saturation of an aquifer, either directly into a formation or indirectly by way of another formation

halocarbons
chemicals containing carbon and members of the halogen family

heat cascading
process integration aimed at effectively utilizing thermal energy at all temperature levels by successively using waste heat from higher temperature processes as heat sources for lower temperature ones; also applicable to cold sources at below-ambient temperatures, if reversed

heat content
the amount of heat per unit mass released upon complete combustion

heath
any of the various low-growing shrubby plants of open wastelands, usually growing on acidic, poorly drained soils

heat island
an area within an urban area characterized by ambient temperatures higher than those of the surrounding area because of the absorption of solar energy by materials like asphalt

heat pump
a device capable of extracting heat from a lower temperature source (e.g., the external environment) and releasing thermal energy to a higher temperature heat sink (e.g., an installation requiring heating); this temperature lift is achieved by using an internal fluid loop that undergoes changes in phase (evaporation and condensation) and operating pressure (expansion and compression)

herbaceous
flowering, non-woody plants

herbivore
an animal that feeds on plants

higher heating value
quantity of heat liberated by the complete combustion of a unit volume or weight of a fuel assuming that the produced water vapor is completely condensed and the heat is recovered; also known as gross calorific value

hydroperiod
the depth, frequency, duration, and season of wetland flooding

ice cap
a dome-shaped glacier covering a highland area (considerably smaller in extent than ice sheets)

ice jam
an accumulation of broken river or sea ice caught in a narrow channel

ice sheet
a mass of snow and ice of considerable thickness and large area greater than 50,000 km^2

ice shelf
a floating ice sheet of considerable thickness attached to a coast (usually of great horizontal extent with a level or gently undulating surface); often a seaward extension of ice sheets

icing
a sheet-like mass of layered ice formed by the freezing of water as it emerges from the ground or through fractures in river or lake ice

immunosuppression
reduced functioning of an individual's immune system

incidence
the number of cases of a disease commencing, or of persons falling ill, during a given period of time within a specified population

incinerator
a furnace or container for burning waste materials

income elasticity
the expected percentage change in the quantity demand for a good given a 1% change in income

industrial ecology
the set of relationships of a particular industry with its environment; often refers to the conscious planning of industrial processes so as to minimize their negative interference with the surrounding environment (e.g., by heat and materials cascading)

industrialization
the conversion of a society from one based on manual labor to one based on the application of mechanical devices

infiltration
flow of water through the soil surface into a porous medium

infrastructure
the basic installations and facilities upon which the operation and growth of a community depend, such as roads; schools; electric, gas, and water utilities; transportation and communications systems; and so on

inoculation
the introduction of a pathogen or antigen into a living organism to stimulate the production of antibodies

integrated resource planning
a system in which a utility considers all means of meeting the energy-service needs of its customers (on both the supply and demand sides) and to select the mix of actions that meets those needs at the least cost to the consumers, possibly including external costs like environmental degradation

isohyet
a line on a map or chart indicating equal rainfall

joule
unit of energy; 1 joule (J) is the work done when the point of application of a force of 1 newton (1 N = 1 kg m/s^2) is displaced through a distance of 1 m in the direction of the force

land use
the purpose an area of the Earth is put to (e.g., agriculture, forestry, urban dwellings, or transportation corridors) or its character (e.g., swamp, grassland, or desert)

lapse rate
the rate of temperature decrease with increase in altitude

leaching
the removal of soil elements or applied chemicals through percolation

legume
plants that through a symbiotic relationship with soil bacteria are able to fix nitrogen from the air (e.g., peas, beans, alfalfa, clovers)

lichen
symbiotic organisms consisting of an alga and fungus important to the weathering and breakdown of rocks

life-cycle cost
the cost of a good or service over its entire lifetime

lignite
brown coal; a low-grade coal having a heat content slightly higher than peat

low emissivity
a property of materials that hinders or blocks the transmission of a particular band of radiation (e.g., that in the infrared)

lower heating value
quantity of heat liberated by the complete combustion of a unit volume or weight of a fuel assuming that the produced water remains as a vapor and the heat of the vapor is not recovered; also known as net calorific value

macroeconomic
pertaining to a study of economics in terms of whole systems, especially with reference to general levels of output and income and to the interrelations among sectors of the economy

maglev
a mode of transport that uses magnetic force to suspend a vehicle above its supporting structure, thereby limiting or eliminating friction between the vehicle and the ground

malaria
endemic or epidemic parasitic disease caused by species of the genus *Plasmodium* (protozoa) and transmitted by mosquitoes of the genus *Auopheles*; produces high fever attacks and systemic disorders, and kills ~2 million people every year

market equilibrium
the point at which demand for goods and services equals the supply; often described in terms of the level of prices, determined in a competitive market, that "clears" the market

market penetration
the percentage of all its potential purchasers to which a good or service is sold per unit time

materials cascading
successive downgrading of a material's use into applications requiring lower quality

methanogenesis
the creation of methane from its constituent molecules

mitigation
an anthropogenic intervention to reduce the emissions or enhance the sinks of greenhouse gases

monsoon
the season of the southwest wind in India and adjacent areas that is characterized by very heavy rainfall

montane
the biogeographic zone made up of relatively moist, cool upland slopes below timberline and characterized by the presence of large evergreen trees as a dominant life form

moraine
an accumulation of Earth and stones carried and finally deposited by a glacier

morbidity
the rate of occurrence of disease or other health disorder within a population, taking account of the age-specific morbidity rates; health outcomes include, for example, chronic disease incidence or prevalence, rates of hospitalization, primary care consultations, disability-days (e.g., of lost work), and prevalence of symptoms

mortality
the rate of occurrence of death within a population within a specified time period; calculation of mortality takes account of age-specific death rates, and can thus yield measures of life expectancy and the extent of premature death

net ecosystem production
the net gain or loss of carbon from an ecosystem or region

net primary production
the increase in plant biomass or carbon of a unit of a landscape; gross primary production (all carbon fixed through photosynthesis) minus plant respiration equals net primary production

newton
the unit of force required to accelerate 1 kg of mass 1 m/s^2

nitrification
the oxidation of ammonium salts to nitrites and the further oxidation of nitrites to nitrates

NO_x
any of several oxides of nitrogen

non-tidal wetlands
areas of land not subject to tidal influences where the water table is at or near the surface for some defined period of time, leading to unique physiochemical and biological processes and conditions characteristic of water-logged systems

northern wetlands
wetlands in the boreal, subarctic, and arctic regions of the northern hemisphere

orography
the branch of physical geography that deals with mountains and mountain systems

pack ice
any area of sea, river, or lake ice other than fast ice

paleoecology
the branch of ecology concerned with identifying and interpreting the relationships of ancient plants and animals to their environment

pancake ice
new ice about 0.3 to 3-m in diameter, with raised rims about the circumference from striking other pieces

peat
unconsolidated soil material consisting largely of partially decomposed organic matter accumulated under conditions of excess moisture or other conditions that decrease decomposition rates

perfluorocarbons
organic chemicals containing only carbon and fluorine (e.g., carbon tetrafluoride and hexafluoroethylene)

permafrost
perennially frozen ground that occurs wherever the temperature remains below 0°C for several years

phenology
the study of natural phenomena that recur periodically (e.g., blooming, migrating) and their relation to climate and seasonal changes

photochemical smog
a mix of photochemical oxidant air pollutants produced by the reaction of sunlight with primary air pollutants, especially hydrocarbons

photoperiodic response
response to the lengths of alternating periods of light and dark as they affect the timing of development

photosynthate
the product of photosynthesis

photovoltaic
capable of producing a voltage when exposed to radiant energy, especially light

physiographic
of, relating to, or employing a description of nature or natural phenomena

phytophagous insects
insects that feed on plants

potential evapotranspiration
maximum quantity of water capable of being evaporated in a given climate from a continuous stretch of vegetation (i.e., includes evaporation from the soil and transpiration from the vegetation of a specified region in a given time interval, expressed as depth)

potential production
estimated production of a crop under conditions when nutrients and water are available at optimum levels for plant growth and development; other conditions such as daylength, temperature, soil characteristics, etc., determined by site characteristics

prevalence
the proportion of persons within a population who are currently affected by a particular disease

price elasticity
the responsiveness of demand to the cost for a good or service; specifically, the percentage change in the quantity consumed of a good or service for a 1% change in the price for that good or service

primary energy
the energy that is embodied in resources as they exist in nature (e.g., coal, crude oil, natural gas, uranium, or sunlight); the energy that has not undergone any sort of conversion

producer surplus
returns beyond the cost of production that provide compensation for owners of skills or assets that are scarce (e.g., agriculturally productive land)

radiative forcing
a change in average net radiation at the top of the troposphere resulting from a change in either solar or infrared radiation due to a change in atmospheric greenhouse gases concentrations; perturbance in the balance between incoming solar radiation and outgoing infrared radiation

rangeland
unimproved grasslands, shrublands, savannas, and tundra

redox potential
the relative capacity of an atom or compound to donate or accept electrons, expressed in volts; higher numbers denote more powerful oxidizers

reference scenario
the set of predicted levels of economic growth, energy production and consumption, and greenhouse gas emissions (and underlying assumptions) with which other scenarios examining various policy options are compared

reforestation
forest stands established artificially on lands that have supported forests within the last 50 years

regenerative braking
a process wherein the motion of a vehicle is slowed or stopped, and the energy of motion is captured and stored for future reuse

reserves
those occurrences of energy sources or minerals that are identified and measured as economically and technically recoverable with current technologies and prices

resources
those occurrences of energy sources or minerals with less certain geological and/or economic/technical recoverability characteristics, but that are considered to become potentially recoverable with foreseeable technological and economic development

respiration
the metabolic process by which organisms meet their internal energy needs and release CO_2

rotary kiln
a rotating cylinder heated to dry or chemically transform its contents

runoff
water (from precipitation or irrigation) that does not evaporate or seep into the soil but flows into rivers, streams, or lakes, and may carry sediment

ruderal
pertaining to or inhabiting highly disturbed sites; weedy

salinization
the accumulation of salts in soils

saltation
the transportation of particles by currents of water or wind in such a manner that they move along in a series of short intermittent leaps

seasonal climate
a climate characterized by both warm and cold periods through the year

second-law efficiency
see exergy efficiency

semi-arid lands
ecosystems that have >250 mm precipitation per year, but are not highly productive; usually classified as rangelands

sensitivity
the degree to which a system will respond to a change in climatic conditions (e.g., the extent of change in ecosystem composition, structure and functioning, including net primary productivity, resulting from a given change in temperature or precipitation)

sequestration
to separate, isolate or withdraw; usually refers to removal of CO_2 from atmosphere by plants or by technological measures

set-aside program
a generic term covering a variety of government programs—primarily in the U.S., Canada, and Europe that require farmers to remove a portion of their acreage from production for purposes of controlling yield, soil conservation, etc.

shelterbelt
a natural or artificial forest maintained for protection against wind or snow

silt
unconsolidated or loose sedimentary material whose constituent rock particles are finer than grains of sand and larger than clay particles

slip faces
the lee side of a dune where the slope approximates the angle of rest of loose sand (usually ~33°)

snowpacks
a seasonal accumulation of slow-melting snow

soil erosion
the process of removal and transport of the soil by water and/or wind

southern oscillation
a large-scale atmospheric and hydrospheric fluctuation centered in the equatorial Pacific Ocean; exhibits a nearly annual pressure anomaly, alternatively high over the Indian Ocean and high over the South Pacific; its period is slightly variable, averaging 2.33 years; the variation in pressure is accompanied by variations in wind strengths, ocean currents, sea- surface temperatures, and precipitation in the surrounding areas

sphagnum moss
a genus of moss that covers large areas of wetlands in the northern hemisphere; sphagnum debris is usually a major constituent of the peat in these areas

stakeholders
the entities that will be affected by a particular action or policy

stomata
the minute openings in the epidermis of leaves through which gases interchange between the atmosphere and the intercellular spaces within leaves

succession
transition in the composition of plant communities following disturbance

superconduction
the flow of electric current without resistance in certain metals, alloys, and ceramics at temperatures near absolute zero degrees Kelvin, and in some cases at temperatures hundreds of degrees above absolute zero (high-temperature superconduction)

susceptibility
probability for an individual or population of being affected by an external factor

sustainable
a term used to characterize human action that can be undertaken in such a manner as to not adversely affect environmental conditions (e.g., soil, water quality, climate) that are necessary to support those same activities in the future

symbionts
organisms that live together to mutual benefit [e.g., nitrogen-fixing bacteria that live with a plant (legume)]

synoptic
relating to or displaying atmospheric and weather conditions as they exist simultaneously over a broad area

taiga
coniferous forests of northern North America and Eurasia

talik
a layer of unfrozen ground occurring between permafrost and the active layer

technological calorie
the amount of heat needed to raise the temperature of 1 g of water 1°C at 15°C

thermodynamic free-energy limit
the minimum possible amount of energy required for producing a substance from its components, corresponding to the energy required to break down and/or create chemical bonds between molecules; the stronger the bond, the more energy is required to synthesize or break down a substance, which limits the possibility of lowering energy consumption by industrial process energy-efficiency improvements

thermohaline circulation
circulation driven by density gradients, which are controlled by temperature and salinity

thermokarst
irregular, hummocky topography in frozen ground caused by melting of ice

timberline
the upper limit of tree growth in mountains or high latitudes

transpiration
the emission of water vapor from the surfaces of leaves or other plant parts

tsunami
a large tidal wave produced by a submarine earthquake, landslide, or volcanic eruption

unexploited energy
energy (usually thermal, at near-environmental temperature) that is discarded in spite of its potential for use; often existing in large amounts, but with a low heat value/work potential

upwelling
transport of deeper water to the surface, usually caused by horizontal movements of surface water

urbanization
the conversion of land from a natural state or managed natural state (such as agriculture) to cities

useful energy
the energy drawn by consumers such as heat from their own appliances after conversion of final energy (e.g., mechanical energy at the crankshaft of an automobile engine or an industrial electric motor; the heat of a household radiator or an industrial boiler, or the luminosity of a light bulb)

usufruct
the legal right of using and enjoying the fruits or profits of something belonging to another

vector
an organism, such as an insect, that transmits a pathogen from one host to another

vulnerability
the extent to which climate change may damage or harm a system; it depends not only on a system's sensitivity, but also on its ability to adapt to new climatic conditions

wadi
a water course that is dry except during the rainy season; the stream or flush that runs through it

waste heat
excess heat from industrial or other processes that is either discarded or used in other processes requiring lower temperature heat sources

water use efficiency
carbon gain in photosynthesis per unit water lost in evapotranspiration; can be expressed on a short-term basis as the ratio of photosynthetic carbon gain per unit transpirational water loss, or on a seasonal basis as the ratio of net primary production or agricultural yield to the amount of available water

winter dormancy
period without biochemical activity in plant tissues